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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of: Henryk Oleksy  
Serial No. 09/477,858  
Group Art Unit 2763  
Preliminary Class 714  
Filed: January 5, 2000  
For: A Process of Contour Control Machining of Metal Blocks

Honorable Assistant Commissioner of Patents and Trademarks  
Box: DAC  
Washington, D.C. 20231

**Express Mail No. EL435108998US**

Dear Sir:

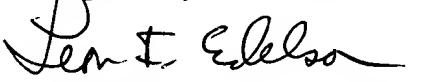
Enclosed are:

1. This Transmittal Letter in duplicate;
2. Response To DECISION ON PETITION TO MAKE SPECIAL Under 37 C.F.R. 1.102 (c ) for the above referenced Patent Application; entitled: A Process of Contour Control for Machining Metal Blocks
3. Receipt Return Postcard;

Please charge the prescribed fee to my Deposit Account Number 05-0423.

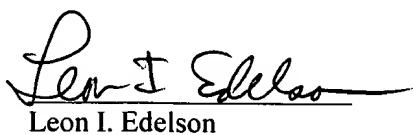
Respectfully submitted,

cc: Henryk Oleksy

  
Leon I. Edelson  
Law Office of Leon I. Edelson  
Registration No. 38,863

Date: July 26, 2001

I hereby certify that this correspondence and the documents referred to as enclosed herein are being deposited with the United States Postal Service on May 25, 2001 in an envelope as "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. 1.10, Mailing Label Number EL435100899US addressed to the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

  
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APPLICANT OR PATENTEE: Henryk Oleksy

ITEM OR PATENT NO. 09/477,858

FILED OR ISSUED: January 5, 2000

FOR: A PROCESS FOR CONTOUR CONTROL MACHINING OF METAL BLOCKS

Attorney's Docket No. Oleksy, Henryk

Express Mail: EL435108998US

**RESPONSE TO DECISION ON PETITION TO MAKE SPECIAL**

Honorable Assistant Commissioner of Patents  
Box DAC  
Washington D.C. 20231

Applicant respectfully requests reconsideration of the decision on the Petition filed May 25, 2001 under 37 C.F.R. Section 1.102 (c) and M.P.E.P. Section 708.02, Section VI, to make the above-identified application special. C.F.R. Section 1.102 (c) and M.P.E.P. Section 708.02, Section VI, in that the invention relates to the reduction of energy consumption in industrial equipment specifically, the more efficient use of energy in electric power generation.

Applicant respectfully submits that the instant petition is accompanied by a showing that the application is for an invention that materially contributes to the more efficient utilization and conservation of energy resources as required by 37 C.F.R. Section 1.102(c) and M.P.E.P. Section 708.02, Section VI. In that the invention relates to the reduction of energy consumption in industrial equipment, specifically, the more efficient use of energy in electric power generation.

Applicant respectfully submits that the invention relates to increasing the efficient use of steam turbines with greater than 90% conversion efficiency of thermodynamic energy to mechanical work and reducing use of gas turbines with approximately 52% conversion efficiency of thermodynamic energy to mechanical energy. Microsoft Encarta Encyclopedia, Microsoft, 1998).

The efficient use of energy by electric utilities requires reducing electric utility plant downtime. A significant cause of plant downtime is erosion of turbine blades of a steam turbine by forced injection of steam at high pressure against the turbine blades, thus damaging the turbine blades and requiring turbine downtime to replace the damaged blades. The downtime of steam turbines results in the use of gas turbines usually reserved for periods of peak demand. Since the invention provides for standard turbine blades conformed to a standard configuration for a specific turbine in advance of required turbine downtime, spare turbine blades, immediately available standard turbine blades for a specific turbine, can immediately replace damaged blades in use. Since typical electric power plants utilize one high pressure steam turbine and one or two lower-pressure steam turbines, a high pressure steam rotor having up to 2000 turbine blades and each lower pressure steam rotor having up to 3000 turbine blades, required downtime to replace damaged turbine blades with substitution of a gas turbine to replace the steam turbine results in consequently

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significant lower energy conversion efficiency for the electric utility plant.

Hand manufacture of turbine blades entails production of turbine blades with potential non-uniformities, and results in each root section of a turbine blade being a unique product because of hand manufacture. The effect of these non-uniformities of the root sections of the turbine blades can be magnified in actual use by the high-speed rotation of the turbine rotor, resulting in premature downtime of the turbine.

Hand manufacture of turbine blades can require 20 working days by a skilled machinist to prepare a single root section. The number of turbine blades required to replace damaged turbine blades, potentially several thousand damaged blades, can demand extended downtime of the electric power generating plant with lowered energy conversion efficiency due to use of gas turbines to supply the required power output. The instant invention reduces the required time to manufacture turbine blades and provides for machine preparation of root sections of turbine blades wherein the complex curved surfaces of root sections of the metal turbine blades are configured accordingly to a pre-determined computer controlled procedure.

The Examiner has indicated that it is not clear how the invention materially contributes to more efficient utilization of resources. It is not seen where the reduction from an estimated 20 working days to prepare the root section and blade down to an unspecified amount of computer controlled machine time, dependent on the number of machines available, materially alters the development of energy resources, considering the long construction time period, that power plants take anywhere from 2-10 years to build. The Examiner has indicated that considering also that such machining can be done in parallel with some other construction activities, it is not clear how the invention materially contributes to development of energy resources.

Applicant respectfully submits that the submitted petition showed that the application is for an invention that materially contributes to the more efficient utilization and conservation of energy resources, examples of which would include inventions relating to the reduction of energy consumption in combustion systems, industrial equipment, etc.

Applicant submits that the instant invention relates to the reduction of energy consumption required by a combustion system that converts thermodynamic energy to mechanical energy. The combustion system and the related industrial equipment because of the extreme hard usage conditions entailed in operation of the combustion system and related equipment require repair and maintenance periods during which periods, substitute combustion systems and related equipment of

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lower efficiency, and consequent higher energy consumption, are utilized in place of the original system and equipment.

The Examiner's position is that increase in availability of resource does not, without more, alter the efficiency of the output or use of the resource and that efficiency is a measure of the amount of useful energy delivered by a system compared to the amount supplied to it, not just a measure of the amount supplied.

Applicant respectfully brings to the Examiner's attention that the efficiency of power generation by conversion of thermodynamic energy in fuels to mechanical energy depends upon the system utilized to make the conversion and the amount of fuel utilized per unit of mechanical energy output per unit of time, since efficiency is always (emphasis added) measured per unit of time.

Applicant respectfully submits that the instant invention permits improved efficiency of a system of mechanical energy generation, by use of steam turbines, with greater than 90% conversion efficiency versus gas turbines with approximately 52% conversion efficiency, by reducing electric utility plant downtime, per unit of fuel utilized per unit of mechanical energy output, per unit of time.

Applicant therefore respectfully submits that the invention materially contributes to more efficient utilization of resources utilized to obtain greater output per unit of resources used, i.e. the source of the energy used including fossil fuels used to generate steam for steam turbines versus increased amounts of natural gas required for gas turbines per unit of output of the power system per unit of time.

With regard to the faster construction of new power plants, it is not seen by the Examiner where a reduction of 20 days down to an unspecified amount of computer controlled machine time, dependent upon the number of machines available, materially alters the development of energy resources considering the long construction time period, and considering also that such machining can be done in parallel with some other construction activities. It is not clear how the invention materially contributes to the development of energy resources.

Applicant respectfully submits that the Examiner has failed to appreciate the significance of the requirement that a skilled machinist would take 20 working days to prepare the root section and blade of a single turbine blade, and that a steam turbine can require up to 3000 turbine blades. Applicant submits that the availability of skilled machinist to provide the required time and skill to prepare the necessary blades depends upon supply of skilled machinists and market demand. Applicant submits that, in real time as of today, the supply of skilled labor lags behind market demand, making actual production time of a single turbine blade by hand methods from 4 to 6

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weeks. Any increased demand for turbine blades as a result of the growing need for more electric power plants will tend to increase actual production times of required blades. The supply of machines needed to product turbine blades by the hand procedure is further limited and in short supply.

Applicant respectfully requests the Examiner note that in order to achieve the same manufacturing result, a one step machining process, without the use of the present invention requires the use of a 5-axis machine (4 axis + rotary table). Currently, there is no machine on the market rigid enough to produce large turbine blades. To produce such a machine would require the development and testing phases already completed in the widely available vertical and horizontal milling machines with rotary tables. The present invention has already been developed and tested, as have the machines it utilizes. The one step alternative has not been developed or tested. This alternative is not practical due to the fact the high demand for turbine blades is immediate, and small machine shops can not afford the development and testing of new machines.

Currently available 5 axis machines are only capable of producing small to medium sized blades and are relatively expensive, approximately U.S. \$650,000 ~ \$850,000, in comparison to their counterparts, vertical machining centers with rotary tables capable of the same product are approximately U.S. \$100,000 ~ \$150,000. Horizontal machining centers with rotary tables are capable of producing large blades are approximately U.S. \$250,000 ~ \$350,000. There is no 5-axis counterpart to the horizontal machining center available on the market. The present invention provides a realistic alternative for small machine shops that cannot afford expensive 5 axis machines.

Applicant also respectfully submits that a major reason for the long construction time required for new power plants is related to the availability of skilled labor to prepare the required components of the power plants. Applicant submits that any invention, which reduces the need for skilled labor hours, will reduce required construction time and will materially contribute to development of available energy resources.

Applicant also respectfully submits that a major reason for the long construction time required for new power plants is related to the availability of skilled labor to prepare the required components of the power plants, as noted above. Applicant submits that any invention, which reduces the need for skilled labor hours, will reduce required construction time and will materially contribute to development of available energy resources. Since efficient utilization of resources is dependent upon the units of time required to utilize the resources correctly, since efficiency is always determined by units of time required for a task, the invention

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materially contributes to the efficient utilization and conservation of resources required to develop available energy resources.

In summary, Applicant respectfully submits the instant invention materially contributes to the more efficient utilization and conservation of energy resources in at least two ways:

- a) By efficiently providing the ready availability of standard turbine blades conformed to a standard configuration for a specific steam turbine in advance of required downtime and maintenance, the efficient use of the steam turbine is increased by reducing the use of gas turbines with lower conversion efficiency, 52% for a gas turbine versus 90% for a steam turbine, during required downtime and maintenance of a steam turbine, using a gas turbine to replace the steam turbine, thus contributing to the more efficient utilization and conservation of energy resources required and used by the electric power plant.
- b) By efficiently providing the ready availability of standard turbine blades conformed to a standard configuration for a specific steam turbine, the efficient utilization and conservation of energy resource is increased by reducing the need of skilled machinists to provide the required time and skill to prepare the necessary turbine blades for a steam turbine, thus contributing to the more efficient utilization and conservation of energy resources per unit of time required to construct a steam turbine power plant.

Henryk Oleksy

NAMES OF INVENTOR(S)

Henryk Oleksy

Signature(s) of Inventor(s)

Subscribed and sworn to before me this 24, day of July, 2001.

Leon I. Edelson  
Notary Public

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